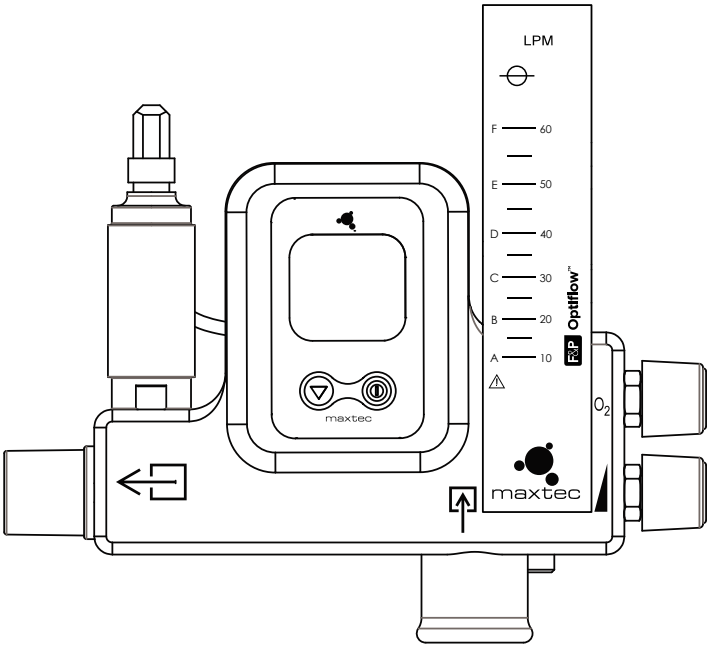

MaxVenturi™

OPERATING MANUAL & INSTRUCTIONS FOR USE

R211P03

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6436 AM Amstenrade
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EC REP

CE-0123

NOTE: Before use, all individuals using the MaxVenturi should become familiar with the information contained in this Operation Manual. Adherence to these instructions is necessary for safe, effective product performance. Thoroughly read all instructions and labeling provided with this device and any other equipment that will be used.

CLASSIFICATION

Classification:. . . . . Class II medical device
Protection against electric shock: . . . . . Internally powered equipment
Protection against water: IPX1
Mode of Operation: . . . . . Continuous
Sterilization: . . . . . See section 7.0
Flammable anaesthetic mixture:. . . . . Not for use in presence of a flammable anaesthetic mixture

Product Disposal Instructions:
The sensor, batteries, and circuit board are not suitable for regular trash disposal. Return sensor to Maxtec for proper disposal or dispose according to local guidelines. Follow local guidelines for disposal of other components

WARRANTY

Provided the device is properly maintained and under normal operating conditions, Maxtec warrants the MaxVenturi to be free from defects of workmanship or materials for a period of 2 years from the date of shipment from Maxtec. Based on Maxtec's product evaluation, Maxtec's sole obligation under the foregoing warranty is limited to making replacements, repairs, or issuing credit for equipment found to be defective. This warranty extends only to the buyer purchasing the equipment directly from Maxtec or through Maxtec's designated distributors and agents as new equipment.

Maxtec warrants the MAX-250E oxygen sensor in the MaxVenturi to be free from defects in material and workmanship for a period of 2 years from Maxtec's date of shipment in a MaxVenturi unit. Should a sensor fail prematurely, the replacement sensor is warranted for the remainder of the original sensor warranty period.

Maxtec recommends that the control valve o-rings be replaced or serviced every 2 years.

Routine maintenance items, such as batteries, are excluded from warranty. Maxtec and any other subsidiaries shall not be liable to the purchaser or other persons for incidental or consequential damages or for equipment that has been subject to abuse, misuse, misapplication, alteration, negligence or accident.

These warranties are exclusive and in lieu of all other warranties, expressed or implied, including warranty of merchantability and fitness for a particular purpose.

WARNINGS ⚠

Indicates a potentially hazardous situation, if not avoided, could result in death or serious injury.

- **This device is not intended for use with life supporting devices/systems.**
- **Failure to comply with the warnings and precautions in this manual could result in instrument damage and possibly jeopardize the wellbeing of the patient and/or health care professional**
- **Improper use of this device can cause inaccuracy of flow and oxygen readings which can lead to improper treatment, hypoxia or hyperoxia, or other patient injury or discomfort.** Follow the procedures outlined in this user manual.
- **Do not use this device near any type of flame or flammable/explosive substances, vapors or atmosphere. Operating the oxygen analyzer in these environments may result in fire or explosion**
- **This device in its entirety (including electronics) is not suitable for use in the presence of flammable anaesthetic mixtures or in an atmosphere of explosive gases. Operating the oxygen analyzer in these environments may result in fire or explosion.**
- **Not for use in an MRI environment.**
- If the O_2% drifts away from the level to which it was set, check to make sure the nasal prongs on the patient interface are not occluded by sputum or the nasal septum. Flow restriction to the circuit or patient interface will cause the oxygen level to increase. Flow restriction downstream of the venturi unit will not be detected by the flow meter.
- This device does not have any alarms for interruption in oxygen supply.
- Allow oxygen reading to stabilize before adjusting oxygen content.
- This device does not have any alarms for oxygen level high or low alarms.
- Never allow excess length of tubing near the patient's head or neck which could result in strangulation.
- Use only Maxtec replacement sensors. Use of any other sensor will void warranty and may lead to product damage, product malfunction, improper treatment to patient, hypoxia, or hyperoxia.
- Do not attach a humidifier or any other source gas to the room air inlet. It should be occupied at all times by the filter listed in the disposables list (see page 8). The inlet filter prevents entrainment of ambient contamination and silences venturi noise. **The filter provided with the MaxVenturi is single-patient use only.**
- Use of this device with a pressurized oxygen bottle may result in inaccurate oxygen concentration readings when used above 40 LPM and at high oxygen concentrations. High tank pressures result in cooling oxygen supply temperatures which affect the accuracy of the oxygen sensor. It is suggested that the device be connected with a long supply hose. Use a 15 ft supply hose where possible — Maxtec P/N (R127P35).
- Use patient circuits that are approved for use with the manufacturer's humidifier as listed in their individual instructions for use.
- Do not attempt to clean the inside of the flow meter. If any malfunction is detected in the function of the flow meter, if any debris or contamination is detected in the flow meter, or if the float sticks in the flow tube, discontinue use immediately and return the device to Maxtec for service.
- Never install the sensor in any location other than the sensor port in the device.

SENSOR WARNINGS:

The Maxtec MAX-250 oxygen sensor is a sealed device containing a mild acid electrolyte, lead (Pb), and lead acetate. Lead and lead acetate are hazardous waste constituents and should be disposed of properly, or returned to Maxtec for proper disposal or recovery.

- Do not use ethylene oxide sterilization. Do not immerse the sensor in any cleaning solution, autoclave or expose the sensor to high temperatures.
- Dropping or severely jarring the sensor after calibration may shift the calibration point enough to require recalibration.

CAUTION:

Indicates a potentially hazardous situation, if not avoided, could result in minor or moderate injury and property damage.

- The MaxVenturi is intended for use with specific patient interface configurations. The numbered scale is intended for use with the Fisher & Paykel* heated humidifier (MR850) and the Optiflow high flow patient interface system (OPT544, OPT546, OPT570). The lettered scale (Labeled A through F) is intended for the alternate patient circuits found on the chart provided in Section 2.
- Never install the sensor in a location that will expose the sensor to patient exhalation or secretions.
- Only use Maxtec approved accessories and replacement parts. Failure to do so may seriously impair the MaxVenturi's performance. Repair or alteration of the MaxVenturi beyond the scope of the maintenance instructions or by anyone other than authorized Maxtec service personnel could cause the product to fail to perform as designed.
- Use of the MaxVenturi near devices that generate strong electrical fields may cause erratic readings.
- This device has a visual low-battery alarm but no audible alarm.
- Calibrate the MaxVenturi weekly when in operation or if environmental conditions change significantly, i.e., Temperature, Humidity, Barometric Pressure. (refer to Calibration sections of this manual).
- The device will assume a percent oxygen concentration when calibrating. Be sure to apply 100% oxygen or room air concentration to the device during calibration or the device will not calibrate correctly. (See section 2.2)
- Do not use ethylene oxide sterilization. Do not immerse the device in any cleaning solution, autoclave or expose the device to high temperatures.
- Use with any other patient interface system may result in false readings from the flow meter.
- The MaxVenturi is not intended for steam, ethylene oxide or radiation sterilization.
- Do not clean with ethanol or acetone.
- After cleaning, and before use on a patient, attach the device to an oxygen supply and allow the device to run at high flow for several minutes to allow any cleaning fluids or vapors to evaporate and be flushed out.
- The device can leak excess oxygen out the entrainment port if the oxygen control knob is turned up too high. This can lead to a minor drop in total air flow to the patient and excess oxygen entering the room environment.
- Federal Law (USA) restricts this device to sale by or on the order of a physician.

ATTENTION:

Indicates a potentially hazardous situation, which, if not avoided could result in property damage.

- If the MaxVenturi is ever exposed to liquids (spills or immersion) or to any other physical abuse, return to Maxtec for evaluation before use.
- Always remove the batteries to protect the unit from potential leaky battery damage when the unit is going to be stored or not in use for periods exceeding 1 month. Replace dead batteries with high quality AA Alkaline batteries.
- **Do not use rechargeable batteries with this device.**
- Maxtec cannot warranty any damage resulting from misuse, unauthorized repair or improper maintenance of the instrument.
- This product is Latex free.
- Avoid usage in environments with greater than 95% relative humidity.

*Maxtec, LLC. is not affiliated with Fisher & Paykel.

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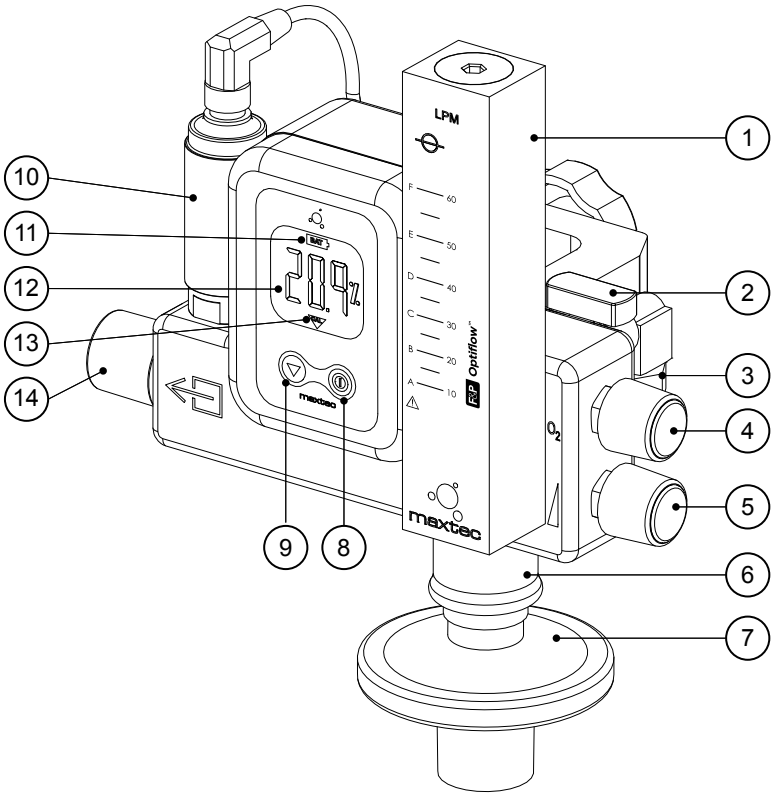
1.0 SYSTEM OVERVIEW

1.1 Component Identification



1. **Flow meter**
2. **Oxygen On/Off Valve**
3. **Inlet Oxygen Fitting**
4. **Oxygen % Control Knob: O_2**
5. **Flow Control Knob:**
6. **Room Air Inlet:**
7. **Room Air Inlet Filter**
8. **ON/OFF Button:**
9. **Calibration Button:**
10. **MAX-250 Series Oxygen Sensor**
11. **Low Battery Indicator:** BAT
12. **3.5-Digit Display**
13. **Calibration Needed Indicator:** CAL
14. **Patient Outlet:**

1.2 Symbol Guide

The following symbols and safety labels are found on the MaxVenturi:

Attention, consult accompanying documents

ETL Classified
conforms to ULSTD 60601-1

Read flow meter float at center

Do not throw away. Follow local guidelines for disposal

Calibration required

Adjustable flow

Patient Outlet

Lot code/Batch code

Serial Number

IPX1 Drip Proof

On/off Button

Calibration Button

Low Battery

LPM Liter per minute flow

Percent

Room Air inlet

Manufacturer

Authorized Representative in the European Community

Use by prescription only

Catalog Number

1.3 Product Primary Functions

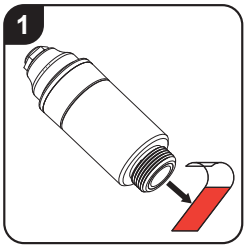
The primary function of the MaxVenturi is to deliver a mixed gas of oxygen and air to either a heated humidifier system or directly to a patient. One of the primary accessories to the MaxVenturi is a Fisher & Paykel heated humidifier (MR850) and the Optiflow high flow patient interface system (OPT544 with OPT546, OPT570). Several other patient interface circuits listed in section 2.5 can also be used with the MaxVenturi.

The MaxVenturi flow meter is labeled to compensate for the back pressure presented by the humidifier/patient interface system.

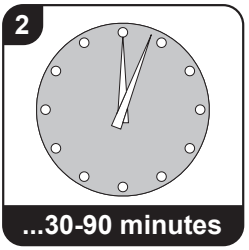
- The numbered scale on the flow meter is labeled corresponds to the compensated flow rate for the Fisher & Paykel Optiflow System.
- The lettered scale on the flow meter corresponds to the flow rates for the other patient interface circuits listed in the chart in Section 2.5.

2.0 SET-UP INSTRUCTIONS

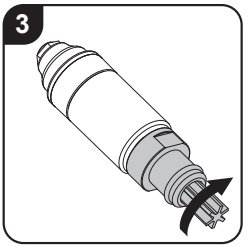
2.1 Sensor Installation



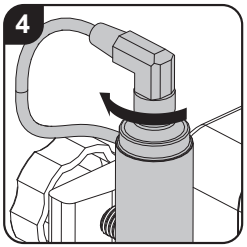
Remove Max-250 sensor from package and pull off barrier film.



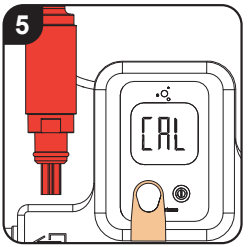
Wait 30 to 90 minutes for sensor to stabilize.



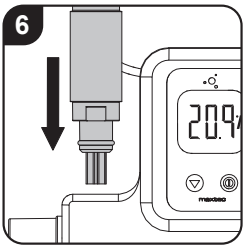
Attach flow diverter.



Attach sensor to sensor cable.



Press and hold CAL button for three (3) seconds. Wait for display to read "20.9%".



Insert sensor into port on MaxVenturi.

2.2 Calibration

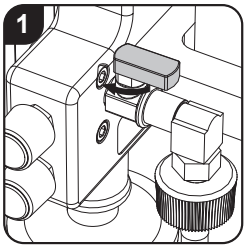
A new calibration is required when:

- The measured O_2 percentage in 100% O_2 is below 97.0%.
- The measured O_2 percentage in 100% O_2 is above 103.0%.
- The CAL reminder icon is blinking at the bottom of the LCD.
- You are unsure about the displayed O_2 percentage, see Factors Influencing Accurate Readings in section 3.0.

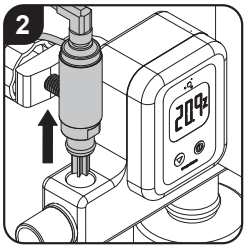
The MaxVenturi can be calibrated at 100% oxygen or room oxygen (20.9%). The One Touch calibration will assume one of these two concentrations.

2.2.1 Room Air Calibration

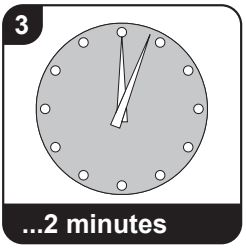
Caution: Turn off all flow of gas to the MaxVenturi before calibration in room air. Calibrating the oxygen sensor in a gas concentration other than room air (20.9%) will result in an incorrect measurement of oxygen concentration.



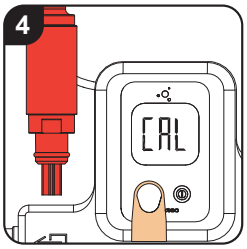
Shut off Oxygen supply.



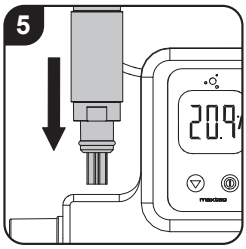
Remove sensor from port.



Wait two (2) minutes for sensor to equilibrate in room air.

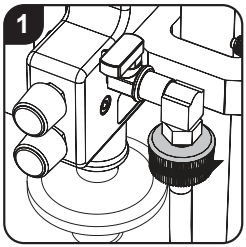


Press and hold CAL button for three (3) seconds. Wait for display to read "20.9%".

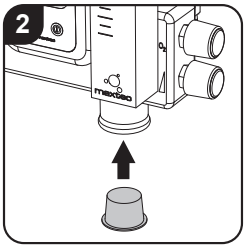


Place sensor in port.

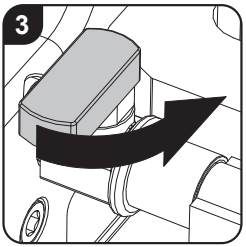
2.2.2 100% Oxygen Calibration



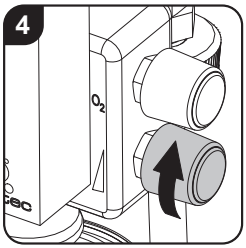
Connect Oxygen supply.



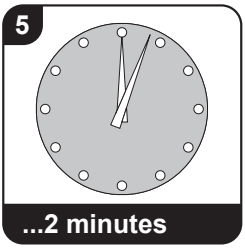
Plug room air inlet.



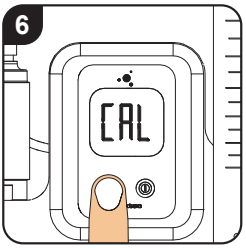
Turn ON/OFF valve to the ON position.



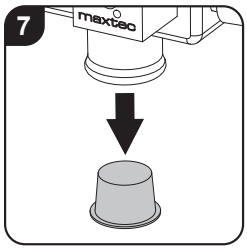
Turn flow knob a few turns to flow gas.



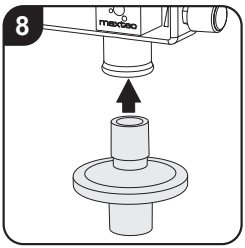
Wait 2 minutes for sensor to equilibrate.



Press and hold CAL button for three (3) seconds. Wait for display to read 100%.



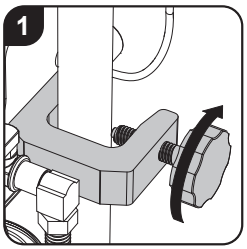
Remove plug from room air inlet.



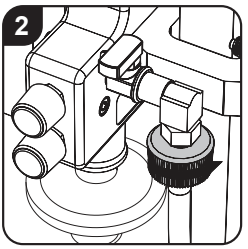
Insert filter into room air inlet.

Note: Analyzer will read "Cal Err St" if the sample gas is not stable or if the oxygen sensor has reached its end of life.

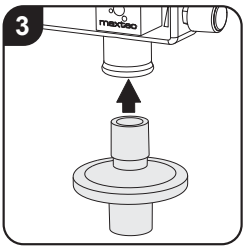
2.3 Device Set-up



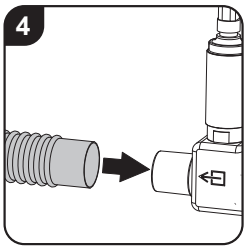
Attach MaxVenturi to IV pole. Twist knob to tighten.



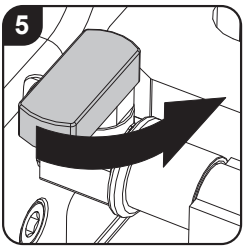
Connect oxygen supply line from wall to MaxVenturi.



Insert air inlet filter in room air inlet port.



Attach patient circuit to MaxVenturi outlet.

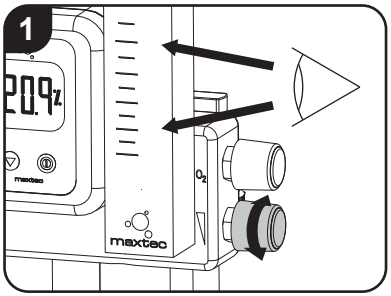


Turn ON/OFF valve to on position.

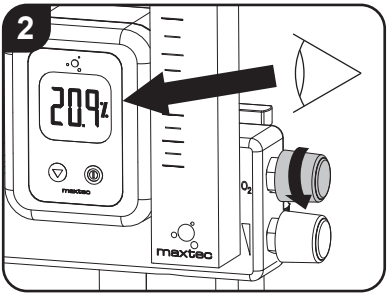
Note: Patient circuit and patient interface should be assembled according to manufacturers instructions supplied with them.

2.4 Flow and Oxygen Settings Adjustment

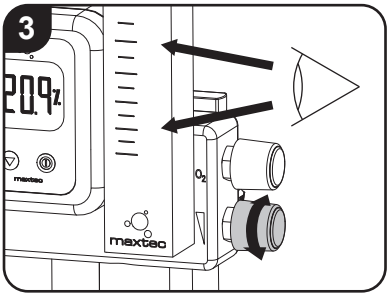
2.4.1 Initial Settings



Adjust flow to desired setting and read flow meter.

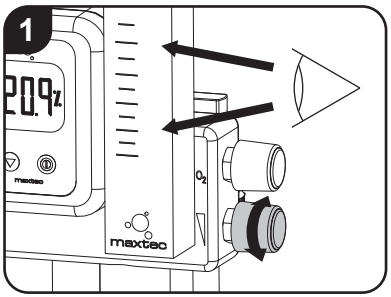


Set desired oxygen mixture by opening O_2% knob and read analyzer display.

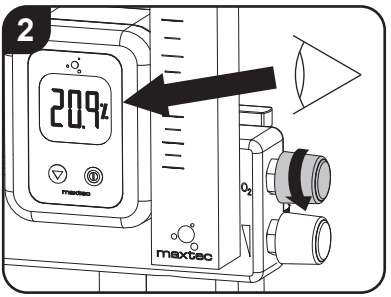


Adjust flow if it has changed.

2.4.2 Changing Flow Settings

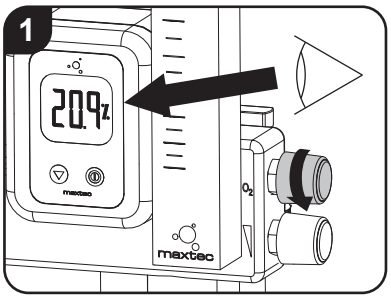


Adjust flow to new desired flow rate.

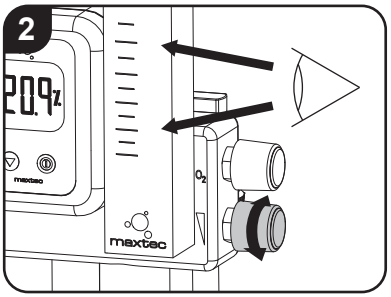


Readjust oxygen concentration to desired setting and wait for analyzer to equilibrate. *Temporarily disconnect patient circuit if necessary.*

2.4.3 Changing Oxygen Settings



Adjust O_2% knob to desired level and wait for analyzer to equilibrate. *Temporarily disconnect patient circuit if necessary.*



Verify flow rate has not changed and adjust if necessary.

Warning: Adjusting the oxygen setting too high at low flows may cause oxygen to exit the air inlet port. Verify the direction of flow by placing your hand under the air filter to feel for air escape.

2.5 Disposables

The MaxVenturi is intended for use with approved disposables. Several patient delivery circuits and patient interfaces have been tested and approved for use with the MaxVenturi. The approved delivery circuits and patient interfaces are:

2.5.1 Disposable Patient Circuits:

- Fisher & Paykel single heated limb circuit (RT202) with humidifier chamber (MR290).
- Airlife single heated limb circuit (RT600-850) with humidifier chamber (MR290).
- Hudson Concha single heated limb circuit 9780-19), with Concha chamber (382-70).
- Standard 6', 22mm corrugated tube (Airlife 001450 or similar. Not humidified).

2.5.2 Disposable Patient Interfaces:

- Optiflow large nasal cannula (Fisher & Paykel OPT544).
- Optiflow medium nasal cannula (Fisher & Paykel OPT546).
- Optiflow Trachaeostomy direct connection (Fisher & Paykel OPT570).
- Pediatric aerosol mask with 22mm inlet (Airlife 001263 or similar).
- Adult aerosol mask (Airlife 001206 or similar).
- Trach adaptor T-piece (Airlife 001500 or similar).
- Superdome oxygen hood (Maxtec R300P06).
- Disposa-Hood oxygen hood (Utah Medical 5119).
- Trachaeostomy mask with 22mm inlet - loose fitting (Airlife 001225 or similar).

Caution: Use of patient circuits or patient interfaces other than these constitutes "off-label use". This can result in device malfunction or harm to the patient.

The delivery circuits can be paired with the patient interface circtuits listed in the table below:

Table Instructions: To determine the desired flow, locate the patient delivery circuit and interface in the two left-hand columns. Find the corresponding flow rate by reading to the right under columns A through F. The lettered columns correspond to the lettered graduations on the flow meter.

CAUTION: The flow rates lilsted in this table are the result of bench testing the MaxVenturi on the indicated patient circuits and interfaces. Actual flows may vary in clinical use depending on the patients physiology, breathing rate and other factors listed in Section 3.0.

	Patient Interface	A	B	C	D	E	F
F&P Humidifier with 22mm Single Heated Limb Circuit	Adult/Pediatric Aerosol Mask, Trach collar, Trach T-piece	15	27	39	50	61	72
	Utah Medical - Disposa Infant Hood	15	27	38	50	61	72
	Maxtec - Superdome Infant Hood	14	24	35	45	54	64
	F&P Medium Nasal Cannula (OPT544)	12	21	31	40	49	58
	F&P Large Nasal Cannula (OPT546)	13	22	32	42	51	60
	F&P Tracheostomy Direct Connection (OPT570)	14	25	36	47	56	67
6' - 22mm Corrugated Tube	Adult/Pediatric Aerosol Mask, Trach collar, Trach T-piece	18	32	47	62	73	86
	Utah Medical - Disposa Infant Hood	18	31	46	60	71	84
	Maxtec - Superdome Infant Hood	15	27	38	50	60	69
	F&P Medium Nasal Cannula (OPT544)	14	24	34	44	53	62
	F&P Large Nasal Cannula (OPT546)	14	25	35	45	54	64
	F&P Tracheostomy Direct Connection (OPT570)	17	29	41	51	62	73
Hudson RCI Concha Humidifier with 22mm Single Heated Limb Circuit	Adult/Pediatric Aerosol Mask, Trach collar, Trach T-piece	16	29	42	54	66	78
	Utah Medical - Disposa Infant Hood	16	29	42	54	66	78
	Maxtec - Superdome Infant Hood	15	26	37	47	57	68
	F&P Medium Nasal Cannula (OPT544)	13	23	32	42	51	61
	F&P Large Nasal Cannula (OPT546)	14	24	34	44	54	65
	F&P Tracheostomy Direct Connection (OPT570)	15	27	39	50	61	72

2.5.3 Inlet Filter:

- Air Safety Ltd. Cat.No. RP34P02

3.0 FACTORS INFLUENCING ACCURATE READINGS

3.1 Elevation/Pressure Changes

- Changes in elevation result in a reading error of approximately 1% of reading per 250 feet.
- A change in altitude greater than 500 ft will require sensor recalibration.
- This device does not automatically compensate for changes in barometric pressure or altitude. If the device is moved to a location of a different altitude, it must be recalibrated before use (see section 2.2).

3.2 Temperature Effects

The MaxVenturi will read correctly (within ±3%) when operating at thermal equilibrium within the operating temperature range of 15˚C - 40˚C (59˚F - 104˚F). The device must be thermally stable when calibrated and allowed to thermally stabilize after experiencing temperature changes before readings are accurate.
For these reasons it is recommended to:

- Perform the calibration procedure at a temperature close to the temperature at which the device will be operated.
- Allow adequate time for the sensor to equilibrate to a new ambient temperature.

ATTENTION: "CAL Err St" may result from a sensor that has not reached thermal equilibrium.

4.0 CALIBRATION ERRORS AND ERROR CODES

The analyzer has a self test feature built into the software to detect faulty calibrations, oxygen sensor failures, and low battery voltage. The tests and actions to take if an error occurs are:

EO2: NO SENSOR ATTACHED

- Disconnect and reconnect sensor. Unit should perform an auto calibration and should read 20.9%. If not, contact Customer Service for possible sensor replacement.

EO3: NO VALID CALIBRATION DATA AVAILABLE

- Make sure unit has reached thermal equilibrium.
- Perform calibration as described in this manual.

EO4: BATTERY BELOW MINIMUM OPERATING VOLTAGE

- Replace batteries.

CAL Err St: O_2 SENSOR READING NOT STABLE

- Wait for displayed oxygen reading to stabilize when calibrating the device at 100% oxygen.
- Wait for unit to reach thermal equilibrium. Note: this can take up to one half hour if the device is stored in temperatures outside the specified operating temperature range.

CAL Err lo: SENSOR VOLTAGE TOO LOW

- Repeat calibration routine as described in this manual. If unit repeats this error more than three times, contact Customer Service.

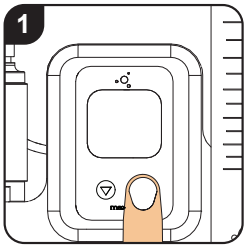
CAL Err hi: SENSOR VOLTAGE TOO HIGH

- Repeat calibration routine as described in this manual. If unit repeats this error more than three (3) times, contact Customer Service.

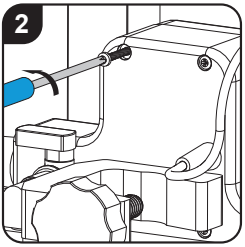
CAL Err Bat: BATTERY VOLTAGE TOO LOW TO RECALIBRATE

- Replace batteries.

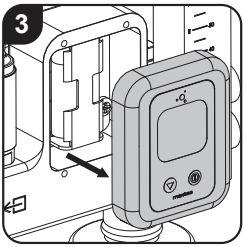
5.0 CHANGING THE BATTERIES



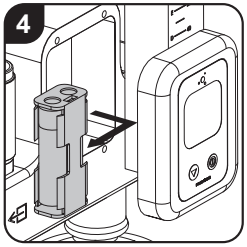
Turn off analyzer.



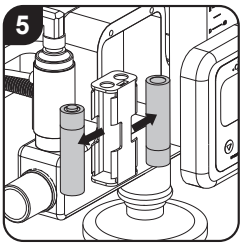
Use screwdriver to remove four (4) screws in back of device.



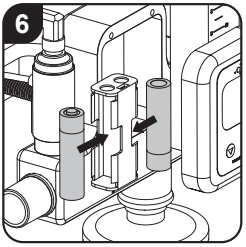
Pull front cover off away from unit.



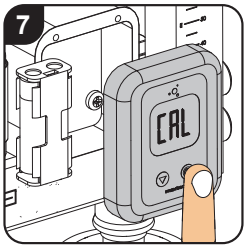
Remove battery pack from rear wall of cavity. Use caution with wires.



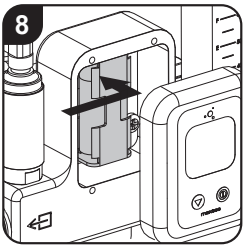
Remove two (2) depleted batteries.



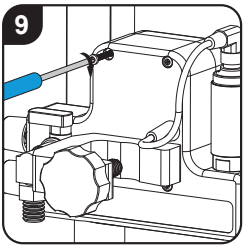
Ensure correct orientation and install two (2) new batteries.



Turn on analyzer to verify power.

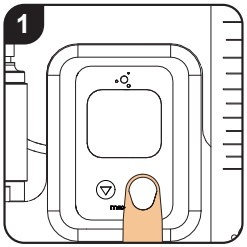


Reattach battery pack to rear wall of cavity. Use caution to not pinch wires between cover and body of device.

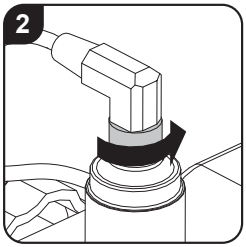


Re-attach front cover with four (4) screws.

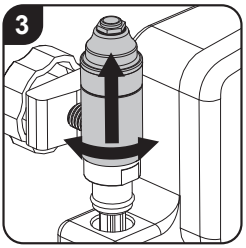
6.0 CHANGING THE OXYGEN SENSOR



Turn off analyzer.



Disconnect sensor from sensor cable.



Remove sensor from sensor port. Dispose of sensor according to local guidelines.

Note: For new sensor installation, follow procedure for new sensor installation in section 2.1.

7.0 CLEANING AND MAINTENANCE

Store the MaxVenturi at a temperature similar to that of its daily use.

Device Cleaning:
When cleaning or disinfecting the exterior of the MaxVenturi, take appropriate care to prevent any solution from entering the device. Do not immerse device in fluids. MaxVenturi external surfaces may be cleaned using a cloth moistened with 65-70% isopropyl alcohol/water solution or a germicidal wipe.

Oxygen Sensor Cleaning:

- Clean the sensor with a cloth moistened with 65-70% isopropyl alcohol/water solution.
- Maxtec does not recommend use of spray disinfectants because they can contain salts which can accumulate in the sensor membrane and impair readings.
- The oxygen sensor is not intended for steam, ethylene oxide or radiation sterilization.

8.0 SPECIFICATIONS

8.1 Analyzer Specifications

Measurement Range: 0-100%
Resolution: 0.1%
Accuracy and Linearity: . . . . . 1% of full scale at constant temperature, R.H. and pressure when calibrated at full scale
Total Accuracy: . . . . . ±3% actual oxygen level over full operating temperature range
Response Time: . . . . . 90% of final value in approximately MAX-250E 15 seconds at 23˚C
Warm-up Time: . . . . . None required
Operating Temperature: . . . . . 15˚C - 40˚C (59˚F - 104˚F)
Storage Temperature: . . . . . -15˚C - 50˚C (5˚F - 122˚F)
Atmospheric Pressure: . . . . . 800-1013 mBars
Humidity: . . . . . 0-95% (non-condensing)
Power Requirements: . . . . . 2, AA Alkaline batteries (2 x 1.5 Volts)
Battery Life: . . . . . approximately 5000 hours with continuous use
Low Battery Indication: . . . . . battery icon displayed on LCD
Sensor Type: . . . . . Maxtec MAX-250 series galvanic fuel cell
Expected Sensor Life: . . . . . MAX-250E > 1,500,000 O_2 percent hours minimum (2-years in typical medical applications)
Dimensions: . . . . . 7.3 x 6.6 x 5.3 (185mm x 167mm x 135mm)
Weight: . . . . . 2.54 lbs (1.15kg)
Drift of Measurement: . . . . . < +/-1% of full scale at constant temperature, pressure and humidity

8.2 Oxygen Diluter Specifications

Flow: . . . . . 10-55 LPM adjustable
Flow Accuracy:

	Nominal (LPM)	Accuracy
	10	±33%
Optiflow Operating Range	20	±18%
	30	±15%
	40	±11%
	50	±11%
	60	±9%

FiO_2 Range: 32%-100%
Oxygen inlet supply pressure: . . . . . 45-55 psig
Oxygen inlet filter (internal): . . . . . 45-90 micron pore size
Ambient air inlet filter: . . . . . Single patient use filter (see section 2.5 for appropriate filter details)

8.3 Oxygen Inlet Supply:

This device was designed for an oxygen inlet pressure of 3.5 bar (50psi). Certain geographical areas use 4 bar (58psi) or 5bar (73psi) as the standard piped oxygen distribution pressure.
This device can be operated at these pressures but the flow readings on the flow meter must be corrected for the additional pressure. The table below gives correction factors for each flow meter graduation indicating the percent increase in flow from nominal that will result due to the increased inlet pressure at 4bar and 5bar.

Nominal Flow LPM	4 Bar (% increase)	5 Bar (% increase)
10 - A	13	34
20 - B	9	24
30 - C	7	18
40 - D	6	16
50 - E	5	13
60 - F	4	12

9.0 MaxVenturi SPARE PARTS AND ACCESSORIES

9.1 Included With Your Unit

Part Number:	Item:
R211P03	Adjustable Flow MaxVenturi Medical Unit with Sensor
R211M03	User's Guide and Operating Instructions
R125P03-002	MAX-250E Oxygen Sensor
RP34P02	Air inlet filter

9.2 Standard Replacement Parts and Accessories

Part Number:	Item:
R127P35	15' coiled polyurethane oxygen hose with DISS ends.

9.3 Other Replacement Parts and Repairs

For repair or parts issues not specified in this manual refer to the MaxVenturi service manual (R211M01), or the MaxVenturi preventative maintenance manual (R211M02).

9.4 Preventative Maintenance

It is recommended by Maxtec that service personnel check the function of the device once a year, or as needed. The MaxVenturi Preventative Maintenance Manual will guide you through the process. It is available for free at www.maxtecinc.com.

10.0 TROUBLESHOOTING

Problem: The flow does not reach 55LPM even with the flow valve wide open.

Possible Cause: The pressure of your piped oxygen supply in your hospital may be low. Also check to see if the float in the flow meter is sticking. Tip the unit back and forth. Ball should roll freely. If it seems to stick or hesitate, return the unit to Maxtec for service. If you cannot detect the problem, contact the Maxtec Service Department by calling the number listed in this manual. Do not disassemble the device to try to detect an internal problem.

Problem: The oxygen level on the display does not reach 100%, even with the oxygen control knob fully open.

Possible Cause: Check if the device needs to be calibrated. If you wish to use the device at oxygen concentrations closer to 100% oxygen, it is best to calibrate the device at 100% oxygen. Refer to the calibration section in this manual and follow the 100% oxygen calibration routine. If this does not solve the problem, contact the Maxtec Service Department.

Problem: The oxygen level displayed does not go as low as the level indicated in the specifications, even with the oxygen control knob completely closed.

Possible Cause: It is very likely the device needs to be calibrated. Also check to make sure the humidifier and patient delivery disposables are the correct size and installed correctly with no kinking or occlusion. Check the air inlet filter for moisture or dirt - replace if necessary. Valve cartridges may be worn; perform leak test according to preventative maintenance procedure.

11.0 AIR-ENTRAINMENT DEVICES VS BLENDERS

There are basic differences in the operation of a venturi air-entrainment device, such as the MaxVenturi, versus an air oxygen blender. **Some of the differences are listed in the chart below**. Further information regarding the use of these types of devices can be found in literature such as:

R. Wilkins et. al, Egan's Fundamentals of Respiratory Care, St. Louis: Mosby, 2003.

Maxtec recognizes that the condition of the patient should be the primary factor in deciding which type of treatment is suitable for use.

MaxVenturi	Air-oxygen Blender
FiO2 Range: 30-100%	FiO2 Range: 21-100%
Flow is dependent on inlet pressure	Flow is less dependent on inlet pressure
No low pressure gas alarms	Audible alarm for low gas pressure or differential gas pressure
Flow is compliant to downstream flow resistance	Flow is less compliant to downstream flow resistance
Requires only an oxygen supply	Requires both oxygen and medical air supply
Flow: 0-60LPM	Flow: 0-120 LPM
Requires large bore tubing	Supports any size tubing